NTSC

BETACAM SP™

BVW-50

Betacam SP Portable Recorder/Player

Sony Broadcast

SONY®

The powerful Sony Betacam SP range now has an exciting new addition, the BVW-50 Portable Recorder/Player.
Sharing many of the excellent features of the field-proven BVW-35, the BVW-50 includes many innovations that make it ideal for a wide range of portable VTR applications, from sophisticated field operations to industrial video production use.
For while maintaining the same portability as the BVW-35, the BVW-50 accepts both L-size and S-size cassettes, achieving a recording/playback time of over 90 minutes. A built-in Time Base Corrector is included, but advanced design has enabled a dramatic reduction in power consumption. Of course, reliability and stability have also been remarkably improved. Combining a number of improvements with the superb picture quality of the Betacam SP format, the BVW-50 will satisfy both traditional video production needs as well as the most innovative requirements that the video industry can generate.
The BVW-50, a new dimension for Betacam SP, presents unprecedented possibilities for the growing broadcast and industrial markets.

Features

High Video/Audio Quality

When used with metal particle tape videocassettes, the BVW-50 conforms to the Betacam SP recording format with its wide luminance bandwidth, improved signal-to-noise ratio, and other superior key video parameters.
When used with oxide tape videocassettes, recordings conform to the conventional Betacam format.
Any existing Betacam VTR can playback metal particle tape recorded by the BVW-50 without any problem.
The BVW-50 now includes an adaptive 3-line comb filter to obtain highly precise Y/C separation. New digital LSI's are employed for all video signal processes including Y/C separation, decoding of chrominance signal and CTDM (Compressed Time Division Multiplex) for improved performance and stability.

A maximum of four audio channels, consisting of two longitudinal and two AFM channels, are available.
The longitudinal audio tracks are recorded using the well-proven Dolby™ C-type Noise Reduction system.
FM modulated audio is recorded simultaneously with the video information by the rotary video head.

Low Power Consumption

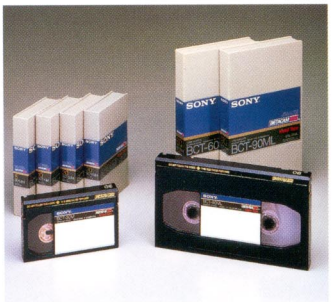
Although the BVW-50 provides a recording and playback time of over 90 minutes and has a built-in TBC capability, its power consumption has been drastically reduced.
The use of newly developed IC's and improved circuit construction play an important role in minimizing the BVW-50's power consumption. It consumes only 19W of power in Save Recording Mode, almost half that of the

BVW-35. This allows continuous operation for up to 180 minutes on one fully charged BP-90A battery, or up to 170 minutes on two fully charged NP-1B batteries, minimizing the weight carried by operational crews in the field. The battery compartment is designed so that the single BP-90A or two NP-1B batteries can be easily interchanged.

Compact and Lightweight

Refinement of the tape transport mechanism and the use of newly developed IC's result in the BVW-50 being remarkably compact and lightweight, in spite of its many additional features. Its weight is only 8.5 kg (18 lb 12 oz) including a BP-90A battery and an S-size videocassette and the size is 305(W) × 136(H) × 341(D)mm (12 1/8 × 5 3/8 × 13 1/2″). This compares to the BVW-35 which weighs 8.6 kg (19 lb) and is 283(W) × 128(H) × 343(D)mm (11 1/4 × 5 1/8 × 13 5/8″). This unique combination of portability, increased recording time and operational features can only expand the flexibility of the BVW-50 in field productions.

Longer Record/Playback Time



The BVW-50 is designed to accept either L-size or S-size cassettes, providing a recording/playback time of over 90 minutes with the L-size cassette, and more than 30 minutes with the S-size cassette.
Sony offers a line-up of 5/10/20/30 minute Betacam SP videocassettes in the S-size range and 5/10/20/30/60/90 minute videocassettes in the L-size range.

Front Loading System

The BVW-50 incorporates a front access mechanism, and this has enabled the BVW-50 to have a one-piece top panel made of high strength diecast magnesium with no moving parts. This ensures maximum stability and reliability of the cassette loading mechanism. The cassette lid, linked to the movement of the cassette compartment, is automatically opened and closed for tape insertion and ejection. This allows quick cassette changing which, together with the long recording time of L-cassettes, reduces the possibility of dust getting into the tape transport and minimizes the incidence of tape dropout.

Audio/Video Confidence Playback

Confidence playback allows simultaneous playback of audio and video during recording. A monochrome video picture can be seen through the camera viewfinder, or alternatively chrominance (CTDM) signals can be monitored by flipping a switch located on the side panel. Audio signals can be monitored through earphones, stereo headphones or via the CH-4 XLR output connector.

Built-in TBC

The BVW-50 is provided with a built-in Time Base Corrector. Broadcast quality pictures can be transmitted by using the FPU with no additional time base corrector required. Advanced high quality digital dropout compensation ensures consistent picture performance. VIDEO LEVEL and SYSTEM SYNC PHASE are adjustable from the side panel. An interface for an external TBC is also provided for user convenience.

Player VTR Capability via Sony 9-pin Remote Control Interface

The BVW-50 is provided with a Sony 9-pin remote control interface (RS-422) which allows connections to Betacam SP studio VTR's so that it can be used as a player VTR. Field editing can also be performed when connected to a BVW-75/70.

Built-in Time Code Generator/Reader

The BVW-50 is provided with a built-in time code generator/reader. LTC is automatically recorded on the

dedicated time code track and the position of VITC insertion in the vertical blanking interval can be selected from the time code panel. Time code is indicated by the eight digit LCD display on the front panel. Real time clock data can be assigned to the user bits of the LTC or the VITC.

Time Code Genlock Capability

Time code genlock capability is incorporated, enabling the BVW-50 to be integrated into multi-camera system in field use.

Audio Controls/Connectors

Independent meters for each of the two longitudinal and two AFM audio tracks are located on the front panel. Individual recording and playback levels can be manually controlled. Audio inputs can be selected from either the camera or line inputs and their gain can be switched for input levels of −60, −20 or +4dBu. Input and output XLR connectors are provided for all four channels.

Component and Composite Input/Output

Either component or composite input signals can be accepted from a camera head via a 26-pin connector. Composite signals can be accepted via a BNC connector. A component output is available to limit picture impairment when dubbing or editing and can be routed to other Betacam VTR's and systems via a 12-pin Dub connector. Two composite outputs are also provided for monitoring or for external TBC connection.

Frame Accurate Back Space Editing

Automatic back space editing with instant start gives sequential recording, without picture breakup at the transition points.

High Speed Picture Search and Fast Forward/Rewind

The speed ranges of both picture search and Fast Forward/Rewind modes have been widened to ±5 times normal speed for Search mode and ±16 times normal speed for Fast Forward/Rewind modes. Recognizable pictures can be obtained over the full range of both search and FF/REW speeds. With the adoption of a built-in TBC, Search mode offers a color picture and Fast Forward/Rewind modes provide monochrome pictures.

Character Generator

The BVW-50 is provided with a built-in character generator which can superimpose characters on Video Output 2. It can display either time code generator/reader data (VITC/LTC/U-BIT) or CTL timer data. This function is very convenient, when creating off-line tapes for decision making for example. Function status and self-diagnostic status can also be displayed.

Phantom Power Supply

The XLR input connectors associated with all four audio channel inputs provide 48V phantom powering for external microphones. Phantom power can be independently switched for each of the four channels.

Large LCD Display

A large 8-digit LCD display provides Tape Time, Time Code and User Bit indications. Tape remaining and Battery status can be displayed on a Bargraph meter. Various warning indications are also displayed in the same area.

Improved Serviceability

For easy maintenance and service, the BVW-50 is provided with a sophisticated diagnostic system. Various modes can be selected and executed via the Time Code Advance/Shift key. The status can be superimposed on a monitor through the Video Output 2 connector.

Optional BVR-3 Remote Controller

The optional BVR-3 Remote Controller allows remote control of functions, such as recording, playback, stop, pause, fast forward, rewind, five times normal speed search in the forward and reverse direction and key inhibit. Connection with the BVW-50 is via an optional RCC-B5G/B10G/B30G cable.

Handy Monitoring

The BVW-50 is equipped with audio and video phono type output connectors, so that these signals can be easily monitored on a TV receiver equipped with similar connectors. A TV receiver with only an antenna input can also be connected to the BVW-50 by using a commercially available RF modulator, for example, the Sony RFU-89 UCKA.

Optional Accessories

BVR-3
Remote Controller

The small and simple BVR-3 Remote Controller is designed for use with the BVW-50 in EFP (Electronic Field Production) applications. Functions such as Fast Forward, Rewind, Play, Stop, Record, Pause, Search, and Key inhibit can be remotely controlled via its special RCC-B5G/B10G/B30G cable, which combines a Sony 9-pin remote control cable with a 4-pin DC power cable. This cables power from the BVW-50 so that an external power supply is not required. The BVR-3 can be easily mounted on a tripod or microphone stand, either directly or by using the supplied thread adaptor.
In addition, it can be used in studio applications. Remote control of various RS-422 equipped Sony VTR's is possible via the RCC-5G/10G/30G 9-pin Remote Control Cable when external DC power is supplied to the BVR-3 through the DC IN connector.

Top view

Supplied Accessories
Thread Adaptor (for 1/2" screw)
Operation and maintenance manual

Specifications

Power requirements:	DC 8.5 to 17V, 30mA
Operating temperature:	– 20°C to 60°C (– 4°F to 140°F)
Storage temperature:	– 20°C to 80°C (– 4°F to 176°F)
Weight:	220g (7.8 oz)
Dimensions:	80(W) × 37(H) × 118(D)mm (3 1/4 × 1 1/2 × 4 3/4")

BCT-5M/10M/20M/30M (Small Cassette)
BCT-5ML/10ML/20ML/30ML/60ML/90ML (Large Cassette)
Videocassette Tapes

*Oxide tape is also available in the same product range.

BP-90A
NiCd Rechargeable Battery

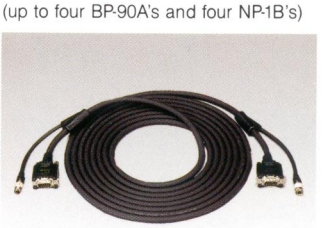
NP-1B
NiCd Rechargeable Battery

AC-500
AC Adaptor

BC-1WB
Battery Charger for the NP-1B
(up to four NP-1B's)

BC-410
Battery Charger for the BP-90A and the NP-1B
(up to four BP-90A's and four NP-1B's)

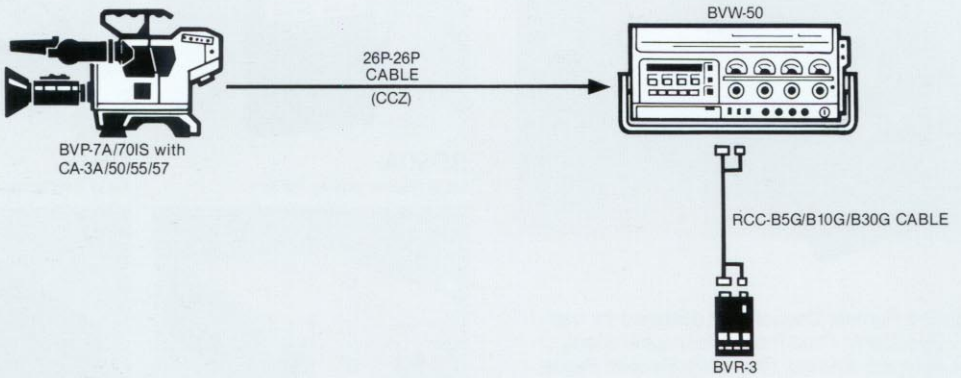
RCC-5G/10G/30G
(5/10/30m)
9-pin Remote Control Cable



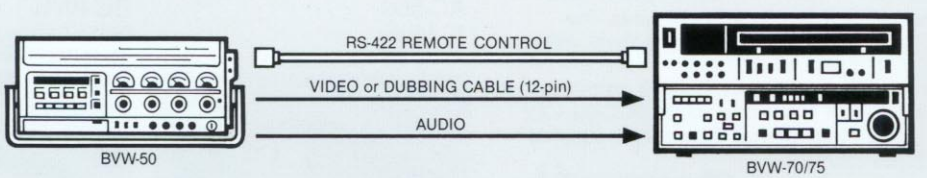
RCC-B5G/B10G/B30G
(5/10/30m)
BVR-3 Connecting Cable

Typical Connections

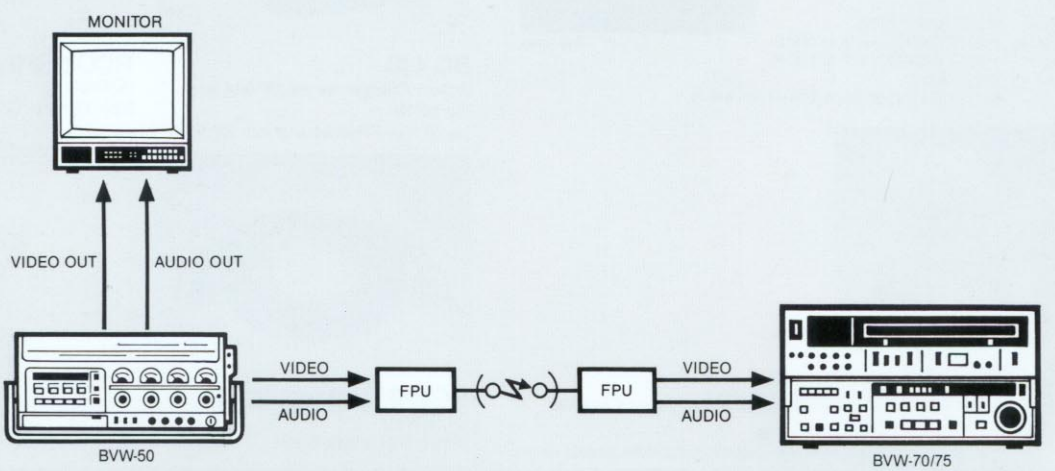
Field recording



Field editing



Field playback



Specifications

Video Performance

	Metal Particle Tape	Oxide Tape
Bandwidth Luminance (50% modulation)	30Hz to 4.5MHz $^{+0}_{-3}$ $^{.5}_{0}$dB	30Hz to 4.1MHz $^{+0}_{-6}$ $^{.5}_{0}$dB
Color Difference (50% modulation)	30Hz to 1.5MHz $^{+0}_{-3}$ $^{.5}_{0}$dB	30Hz to 1.5MHz $^{+0}_{-3}$ $^{.5}_{0}$dB
S/N ratio Luminance	More than 51dB (Component IN/OUT) More than 49dB (Composite IN/OUT)	More than 48dB (Component IN/OUT)
Chrominance AM PM	More than 53dB More than 53dB	More than 50dB More than 50dB
Distortion Differential gain	Less than 2%	Less than 3%
Differential phase	Less than 2°	Less than 3°
K-factor (2T pulse)	Less than 2%	Less than 3%
Y/C delay	Less than 20 nsec.	Less than 20 nsec.

Audio Performance

	Metal Particle Tape	Oxide Tape
Longitudinal Frequency response	40Hz to 15kHz $^{+1}_{-3}$ $^{.5}_{0}$dB	40Hz to 15kHz $^{+3}_{-3}$ $^{0}_{0}$dB
S/N ratio (at 3% distortion level)	More than 72dB	More than 50dB (Dolby NR OFF)
Distortion T.H.D. (at 1kHz reference level)	Less than 1.5%	Less than 2%
Crosstalk (at 1kHz)	Less than −55dB	Less than −55dB
Depth of erasure (at 1kHz)	More than 65dB	More than 65dB
Wow and flutter	Less than 0.15% rms	Less than 0.15% rms
AFM Frequency response	20Hz to 20kHz $^{+0}_{-2}$ $^{.5}_{0}$dB	—
Dynamic range	More than 80dB	—
Distortion T.H.D. (at 1kHz reference level)	Less than 0.5%	—
Crosstalk (at 1kHz)	Less than −65dB	—

Specifications

General

Weight	Approx. 6.6 kg (14 lb 9 oz)
Operating weight (including BP-90A battery and S-cassette)	Approx. 8.5 kg (18 lb 12 oz)
Power requirements	DC 12V $^{+5.0}_{-1.0}$V
Power consumption	Save Rec Mode: 19W PB/EE Rec Mode: 29W
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	−20°C to 60°C (−4°F to 140°F)
Humidity	25% to 80% (relative humidity)
Tape speed	11.86cm/sec.
Playback/recording time	More than 90 min. with BCT-90ML
Fast forward/rewind time	Less than 7 min. with BCT-90ML Less than 2 min. with BCT-30M
Fast forward/rewind speed	Max. ±16 times normal speed (with monochrome picture)
Search speed	Max. ±5 times normal speed (with color picture)
Continuous operating time	With one BP-90A: Approx. 180 min. (in Save Rec Mode) With two NP-1B's: Approx. 170 min. (in Save Rec Mode)

Signal inputs

VIDEO IN (BNC)	1.0Vp-p (VBS)/4.0Vp-p (SYNC for external TBC interface), 75 ohms
CAMERA IN (26-pin)	
Composite	1.0Vp-p, 75 ohms, sync negative
Component	Y: 1.0Vp-p, 75 ohms, sync negative B-Y: 0.7Vp-p, 75 ohms R-Y: 0.7Vp-p, 75 ohms
Audio	−60dBu/−20dBu/+4dBu selectable, high impedance, balanced
SC IN (BNC)	2.0Vp-p, 75 ohms
AUDIO IN CH-1/2/3/4 (XLR 3-pin female)	−60dBu/−20dBu/+4dBu selectable, high impedance, balanced
TIME CODE IN (BNC)	0.5V to 18Vp-p, 10k ohms

Signal outputs

VIDEO OUT 1/2 (BNC)	Composite video, 1.0Vp-p, 75 ohms, sync negative
DUB/COMPONENT OUT (12-pin female)	
Luminance	1.0Vp-p, 75 ohms, sync negative
Chrominance (R-Y/B-Y)	0.7Vp-p, 75 ohms
AUDIO LINE OUT (XLR 3-pin male)	
CH-1/2/3/4	+4dBm, low impedance, balanced
HEADPHONES OUT (stereo jack)	−20dBu (max.), 8 ohms
EARPHONE OUT (mini jack)	−20dBu (max.), 8 ohms
TIME CODE OUT (BNC)	2.2Vp-p, 600 ohms 1.2Vp-p, 75 ohms

Others

REMOTE	D-sub 9-pin, female
DC IN 12V	XLR 4-pin (for an optional AC-500)
DC OUT	4-pin (for an optional BVR-3)
RF MODULATOR INTERFACE	VIDEO OUT/AUDIO OUT (phono type) DC OUT

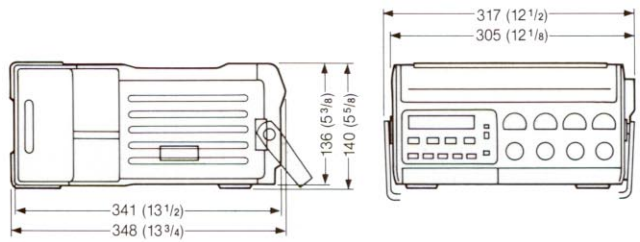
Processor adjustment range

Video level	±1dB
System sync phase	±2μ sec

Supplied accessories

Soft carrying case (1)
Operation and maintenance manual (1)

Dimensions



Unit: mm (inches)

• 0 dBu = 0.775 Vrms

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